





# State of knowledge of the ladybird beetle (Coleoptera, Coccinellidae) fauna of Armenia and other Transcaucasian countries, including two new country records

Shoghik Ghazaryan<sup>1</sup>, Marine Arakelyan<sup>1,2</sup>, Astghik Ghazaryan<sup>1,2</sup>, Jerzy Romanowski<sup>3</sup>,  
Krzysztof Turlejski<sup>3</sup>, Piotr Ceryngier<sup>3</sup>

<sup>1</sup> Department of Zoology, Yerevan State University, Yerevan, Armenia

<sup>2</sup> Research Institute of Biology, Yerevan State University, Yerevan, Armenia

<sup>3</sup> Institute of Biological Sciences, Cardinal Stefan Wyszyński University, Warsaw, Poland

Corresponding author: Piotr Ceryngier ([p.ceryngier@uksw.edu.pl](mailto:p.ceryngier@uksw.edu.pl))



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## Abstract

Beetles (Coleoptera) have been surveyed in Armenia and other Transcaucasian countries since the first half of the 19<sup>th</sup> century. Based on the literature reports and our new data, available information was gathered on the occurrence in Armenia of one of the beetle families, the ladybirds (Coccinellidae). 84 species of Coccinellidae have been reported from this country in the literature and/or collected during our recent field survey. Two of them, *Anatis ocellata* (Linnaeus, 1758) and *Tytthaspis sedecimpunctata* (Linnaeus, 1761), have not been reported in the literature but were present in our field samples, so they can be considered species new to Armenia, and signify new country records. In addition to the 84 species unambiguously reported from Armenia, 14 were broadly reported from larger regions that include that country (Transcaucasia, the Caucasus) or its parts (the Araks valley). The recognized Coccinellidae fauna of Armenia is slightly poorer than the faunas of other Transcaucasian countries (Azerbaijan and Georgia): there are 92 species currently known to occur in Azerbaijan and 90 species in Georgia. Interestingly, the Armenian fauna contains more Caucasian endemics (10 species) and fewer non-natives (1 species) than the faunas of Azerbaijan (4 endemics and 2 non-natives) and Georgia (6 endemics and 6 non-natives).

**Key words:** Biodiversity, checklist, endemic species, non-native species, South Caucasus

## Introduction

The Caucasus ecoregion, a mountainous area on the border between south-eastern Europe and western Asia, covers the North Caucasus (part of Russia), the South Caucasus or Transcaucasia (Georgia, Armenia, and Azerbaijan, plus smaller separatist areas of South Ossetia and Abkhazia), north-eastern Turkey, and north-western Iran (Zazanashvili et al. 2020). Some parts of the region, such as Colchis (western Georgia) or the southern Caspian basin (south-eastern Azerbaijan and northern Iran), were Pleistocene glacial refugia (Hewitt 1999; Tarkhnishvili et al. 2012). Due to its immense biological diversity, which is at risk of rapid decline, the Caucasus was ranked by Myers et al. (2000) among the 25 globally recognized biodiversity hotspots. Shortly afterwards, part of its area (a small portion of southern



Georgia, approximately half of Armenia and the Azerbaijani enclave of Nakhchivan) was moved to the newly distinguished Irano-Anatolian hotspot (Mittermeier et al. 2004). As a result, the Caucasus ecoregion is divided between two of the 36 currently identified biodiversity hotspots (Zazanashvili et al. 2020). As Mumladze et al. (2020) point out, the region has probably been less intensively studied than many other hotspots, partly due to its tenuous political situation over the past decades.

As a country divided by the border between the Caucasus and Irano-Anatolian hotspots, Armenia is arguably an area of particularly high but as yet insufficiently recognized biodiversity. The Armenian invertebrate fauna, due to the influence of different surrounding faunas (European, Mediterranean, Irano-Turanian), as well as the diversity of landscapes and mountainous nature of the area, is rich and characterized by a high level of endemism (Kalashian et al. 2023). In this paper, we review the available data on a small part of this biodiversity, the ladybird beetles (Coccinellidae). So far, there is no paper summarizing knowledge of the ladybird fauna of Armenia, while checklists of Coccinellidae of the other Transcaucasian states, Georgia and Azerbaijan, have recently been published (Migeon and Arabuli 2022; Snegovaya and Zare Khormizi 2022). Furthermore, the ladybirds of the westernmost portion of the Russian Caucasus along the Black Sea coast were the subject of the recent, detailed study by Bieńkowski and Orlova-Bienkowskaja (2020). Hereafter, we first outline a history of coleopterological (with special reference to Coccinellidae) exploration of Armenia followed by an annotated checklist of the Armenian ladybirds based on the literature data and our unpublished records. Finally, we compare ladybird faunas of the three Transcaucasian countries, Armenia, Azerbaijan, and Georgia. We realize that most animals do not respect political boundaries, and that it would be much more biologically sound to compare the faunas of biogeographical units instead of countries. However, this would not be easy to do, given that in many cases the provided record location data is very general. Moreover, the recently published checklists for Georgian and Azerbaijani ladybirds indicate that it would be worthwhile to compile an analogous checklist for Armenia.

### **A brief history of faunistic studies of Coccinellidae in Armenia and adjacent regions**

While there is a lack of publications presenting detailed studies on the Coccinellidae fauna of Armenia, there is much data on this family scattered in books and papers of a broader scope (e.g., on insects or beetles of the region). Furthermore, some systematic works on Coccinellidae, such as species descriptions or taxonomic revisions, contain data from Armenia. Surveys and publications that have particularly contributed to the knowledge of the ladybird fauna of the Caucasus and Armenia are reviewed below in chronological order.

Entomological exploration of the Caucasus began in the first half of the 19<sup>th</sup> century. In 1827, during the Russo-Persian War, a researcher named Szovitz travelled with the Russian army to Transcaucasia to study the flora of the region. In addition to the numerous plants he collected there until 1830, he also caught some insect specimens. On his way back from the expedition, Szovitz fell ill and subsequently died in the Georgian province of Mingrelia in August 1830 (Faldermann 1835). The insects he collected were later examined by Faldermann (1835, 1837, 1838).

Another scientific expedition to the Caucasus organized by order of the Russian Tsar took place in 1829 and 1830, with the French naturalist Édouard Ménétries



(1802–1861) in charge of the zoological part. After the expedition, Ménétries (1832) published a catalogue of recorded animal species, but independently Faldermann (1835, 1837, 1838) united the data on beetles collected by Ménétries with those collected by Szovitz to compile his ‘Fauna Entomologica Trans-Caucasica’.

In 1834 and 1835, the Caucasian entomofauna (mainly Coleoptera) was surveyed by the well-known Russian entomologist Victor Ivanovich Motschulsky, who often signed his works as T. Victor (Victor 1835, 1837). Then, probably in the 1840s and early 1850s, Wagner (1852) spent several years in the Caucasus, Transcaucasia, Armenia, Kurdistan, and western Persia, studying, among other things, the fauna of the region, including beetles. Other major 19<sup>th</sup> century expeditions to the Caucasus involving beetle collecting were those of Schneider and Leder in 1875–1876 (Schneider and Leder 1879) and Leder in 1878 (Leder 1879).

Apart from externally organized Caucasian expeditions, from the 1860s onwards the region was explored as part of the activities of the Caucasus Museum in Tiflis (now Tbilisi). During numerous field trips, the museum’s director Gustav Radde and his colleagues collected abundant insect material, subsequently elaborated by eminent entomologists of the time. The animals, including beetles, held in the collection of the Caucasus Museum, were catalogued by Radde (1899).

In most of the publications reporting on the results of the surveys mentioned above, the locations are given imprecisely and many records cannot be attributed to the area of any currently existing country within its present borders. Based on Ménétries’ (1832) description of his expedition, we can conclude that it took place outside of present-day Armenia (the present-day Russian Caucasus (including Dagestan and Chechnya) and Azerbaijan), but Szovitz’s records are likely to have originated there. However, Faldermann’s (1837) compilation does not indicate which of the reported species were collected by Ménétries and which by Szovitz. The area explored by Wagner’s (1852) expedition was extensive, but his report lacks any information on the location of the animals collected. On the other hand, Wagner’s list of the collected insects is very short and the family Coccinellidae is represented there by only three or four species (two of the four listed names are probably synonyms). Relatively detailed information on the location of the collected species of Coccinellidae can be found in the papers by Motschulsky (Victor 1837), Schneider and Leder (1879), Leder (1879), and Radde (1899). While Leder (1879) reported exclusively from the territories of present-day Georgia and Azerbaijan, some ladybird species reported by Motschulsky (Victor 1837) and, especially, Schneider and Leder (1879) and Radde (1899), were certainly collected within the present Armenian territory.

The first half of the 20<sup>th</sup> century was a time of marked stagnation in the study of the coleopterofauna of the Caucasus. In the second half of the century, the renowned Armenian coleopterist Stepan Iablokoff-Khnzorian conducted his systematic and faunistic research, much of which was devoted to Coccinellidae (e.g., Iablokoff-Khnzorian 1971, 1972, 1974, 1982, 1983). Iablokoff-Khnzorian was primarily a taxonomist, paying little attention to providing geographical details for each of the species he recorded. Therefore, as in some of the 19<sup>th</sup> century publications, the distribution data he provided often do not allow for a clear attribution to a specific country. After the period of Iablokoff-Khnzorian’s research activities, from the 1990s to the present, virtually nothing has been published on ladybirds of Armenia, with the exception of reports by Kalashian et al. (2017, 2019) on the arrival and spread of the invasive harlequin ladybird, *Harmonia axyridis* (Pallas, 1773), in that country.



## Checklist of Coccinellidae reported from Armenia

The checklist includes available literature reports supplemented by previously unpublished data collected between 2018 and 2023 in all 11 provinces of Armenia by MA, AG, and M. Kalashian (National Academy of Sciences, Yerevan). The new data were recorded using standard collection methods, such as a beating tray, sweep net, or direct observation. Specimens collected by MA and AG are deposited in Research Institute of Biology of Yerevan State University, and those collected by M. Kalashian, in the Scientific Center of Zoology and Hydroecology, National Academy of Science, Yerevan.

The systematic arrangement of Coccinellidae, including the sequence of tribes, used in the checklist below follows Che et al. (2021) and the nomenclature of genera and species follows Kovář (2007). To our knowledge, for all species included in this checklist, the names provided by Kovář (2007) are valid. They are given here in bold, while the primary synonyms (provided if different from the valid names) and other synonyms (only those mentioned in the checklist) are in non-bold. The genera and species within the tribes are arranged alphabetically. Names of species that are possible but not certain to occur in Armenia (only generally reported from regions encompassing this country or its parts) are in square brackets to distinguish them from those unquestionably reported from the area of present-day Armenia. For individual species, we first provide new data (if available), including the name of the province, locality, geographical coordinates, altitude, date of collection, number of specimens collected, and the collector's name. We then list the literature reports, starting with those pointing unambiguously to Armenia and then moving on to more general location descriptions that do not exclude Armenia, such as the "Araks valley", "Transcaucasia", or the "Caucasus". At present, Araks' river source and initial course lie in Turkey, which then flows along the Turkish-Armenian border, next the border between Turkey and Nakhchivan, Iran and Nakhchivan, Iran and Armenia, and Iran and Azerbaijan. Finally, it flows to the Kura River on the Azerbaijani territory.

### Subfamily Coccinellinae Latreille, 1807

#### Tribe Stethorini Dobzhansky, 1924

##### ***Stethorus gilvifrons* (Mulsant, 1850)**

*Scymnus gilvifrons* Mulsant, 1850

**Literature data.** Armenia: Schneider and Leder (1879) (Echmiadzin, Yerevan); Jacobson (1915); Kovář (2007). Araks valley: Iablokoff-Khnzorian (1983).

##### ***Stethorus pusillus* (Herbst, 1797)**

*Scymnus pusillus* Herbst, 1797

**Literature data.** Armenia: Kovář (2007). Caucasus: Iablokoff-Khnzorian (1983).



### Tribe Coccinellini Latraille, 1807

#### *Adalia bipunctata* (Linnaeus, 1758)

*Coccinella bipunctata* Linnaeus, 1758

*Coccinella fasciatopunctata* Faldermann, 1835

**New data.** Kotayk: • Tsaghkadzor, 40.5314°N, 44.7249°E, 1841 m a.s.l., Jul. 2021, 5 exx. (leg. M. Arakelyan); Gegharkunik: • Akunk, 40.1572°N, 45.7263°E, 1965 m a.s.l., 19 Oct. 2020, 4 exx. (leg. M. Arakelyan); Vayots Dzor: • Hors, 39.8625°N, 45.2303°E, 1694 m a.s.l., 23 Jul. 2021, 1 ex. (leg. M. Arakelyan); Armavir: • river Kasagh, 40.1047°N, 44.2360°E, 870 m a.s.l., 1 Jun. 2021, 1 ex. (leg. M. Arakelyan); Syunik: • Lichk, 39.6074°N, 46.1113°E, 1929 m a.s.l., 17 May 2022, 8 exx. (leg. M. Arakelyan); Aragatsotn: • Karbi, 40.3233°N, 44.3800°E, 1303 m a.s.l., 22 Jun. 2019, 2 exx. (leg. A. Ghazaryan).

**Literature data.** Armenia: Kovář (2007). Caucasus: Heyden et al. (1891, 1906) (as *Adalia fasciatopunctata stictica* Muls.); Jacobson (1915) (as *A. fasciatopunctata* Fald.); Iablokoff-Khnzorian (1983).

#### *Adalia decempunctata* (Linnaeus, 1758)

*Coccinella decempunctata* Linnaeus, 1758

**New data.** Kotayk: • Hankavan, 40.6019°N, 44.6185°E, 1990 m a.s.l., 25.06.2021, 2 exx. (leg. M. Arakelyan); • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., July, 2021, 1 ex. (leg. M. Arakelyan); Syunik: • Shenatagh, 39.38°N, 46.1322°E, 2500 m a.s.l., 18.06.2021, 1 ex. (leg. A. Ghazaryan); • Lichk, 39.6073°N, 46.1113°E, 1929 m a.s.l., 17.05.2022, 12 exx.; • Harsnadzor rest., 39.3927°N, 46.2784°E, 1929 m a.s.l., 18.05.2022, 2 exx. (leg. M. Arakelyan).

**Literature data.** Armenia: Schneider and Leder (1879); Jacobson (1915); Kovář (2007). Caucasus: Iablokoff-Khnzorian (1982, 1983).

#### *Anatis ocellata* (Linnaeus, 1758), new country record

*Coccinella ocellata* Linnaeus, 1758

**New data.** Kotayk: • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., July, 2021, 1 ex. (leg. M. Arakelyan).

**Literature data.** Caucasus: Iablokoff-Khnzorian (1982, 1983).

**Remarks.** Prior to the record provided above, *A. ocellata* has not been explicitly reported as occurring in Armenia.

#### *Anisosticta caucasica* (Fleischer, 1900)

*Adonia arctica* v. *caucasica* Fleischer, 1900

**Literature data.** Armenia: Jacobson (1915) (as *Hippodamia arctica* subsp. *caucasica* Fleisch.); Kovář (2007). Araks valley: Fleischer (1900) (as *Adonia arctica* v. *caucasica*). Caucasus: Heyden et al. (1906) (as *Hippodamia arctica* v. *caucasica* Fleischer), Winkler (1927) (as *H. arctica* ?s. *caucasica* Fleisch.).



**Remarks.** There is no consensus on what Fleischer's (1900) *A. arctica* v. *caucasica* really is. While Fürsch (1977) and Kovář (2007) considered it as a distinct species belonging to the genus *Anisosticta*, according to Iablokoff-Khnzorian (1982, 1983), it is a synonym of *Hippodamia* (*Semiadalia*) *schneideri* (Weise, 1878). In his opinion, Fleischer's type is a small, untypically colored specimen of *H. (Semiadalia)* (= *Ceratomegilla*) *schneideri*.

***Anisosticta novemdecimpunctata* (Linnaeus, 1758)**

*Coccinella novemdecimpunctata* Linnaeus, 1758

*Anisosticta egena* Weise, 1887

**Literature data.** Armenia: Iablokoff-Khnzorian (1983) (whole Caucasus); Kovář (2007). Caucasus: Heyden et al. (1891) (as *A. 19-punctata* v. *egena* Ws.); Heyden et al. (1906) (as *A. egena* Ws.).

***Aphidecta oblitterata* (Linnaeus, 1758)**

*Coccinella oblitterata* Linnaeus, 1758

**Literature data.** Armenia: Kovář (2007). Caucasus: Winkler (1927).

***Bulaea lichatschovii* (Hummel, 1827)**

*Coccinella Lichatschovii* Hummel, 1827

**Literature data.** Armenia: Schneider and Leder (1879) (Echmiadzin); Jacobson (1915); Iablokoff-Khnzorian (1983) (whole Caucasus); Kovář (2007). Araks valley: Radde (1899) (as *B. Lichatschovi* var. *coronata* Weise.). Transcaucasia: Faldermann (1837). Caucasus: Weise (1879, 1885) (as *B. Lichatschovii* v. *coronata* Ws.); Heyden et al. (1891, 1906) (as *B. Lichatschovi* v. *coronata* Ws.).

**[*Bulaea lividula bocandei* Mulsant, 1850]**

*Bulaea Bocandei* Mulsant, 1850

**Literature data.** Caucasus: Weise (1885) (as *B. Lichatschovii* v. *pallida* Motsch.).

**Remark.** Biranvand et al. (2024) consider *B. lividula bocandei* a separate species, *B. bocandei* Mulsant, 1850.

***Calvia decemguttata* (Linnaeus, 1767)**

*Coccinella decemguttata* Linnaeus, 1767

*Calvia hololeuca* Mulsant, 1850 (synonymized by Iablokoff-Khnzorian (1972))

**Literature data.** Armenia: Kovář (2007). Caucasus: Mulsant (1850, 1866) (as *Calvia hololeuca*); Weise (1879, 1885) (as *Halyzia decemguttata* v. *hololeuca* Muls.); Heyden et al. (1891) (as *Halyzia decemguttata* v. *hololeuca* Muls.); Heyden et al. (1906) (as *Calvia 10-guttata* v. *hololeuca* Muls.); Iablokoff-Khnzorian (1972).



***Calvia quatuordecimguttata* (Linnaeus, 1758)**

*Coccinella quatuordecimguttata* Linnaeus, 1758

*Propylaea Rosti* Weise, 1891

**New data.** Kotayk: • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., July, 2021, 2 exx. (leg. M. Arakelyan); Syunik: • Lichk, 39.6073°N, 46.1113°E, 1929 m a.s.l., 17.05.2022, 1 ex. (leg. M. Arakelyan).

**Literature data.** Armenia: Kovář (2007). Caucasus: Heyden et al. (1906) (as *Propylaea Rosti* Ws.); Jacobson (1915) (as *Propylaea Rosti* Ws.); Winkler (1927) (as *Propylaea Rosti* Ws.).

**[*Calvia quindecimguttata* (Fabricius, 1777)]**

*Coccinella quindecimguttata* Fabricius, 1777

**Literature data.** Caucasus: Iablokoff-Khnzorian (1982, 1983).

***Ceratomegilla apicalis* (Weise, 1879)**

*Adalia apicalis* Weise, 1879

**Literature data.** Armenia: Iablokoff-Khnzorian (1982, 1983); Kovář (2007). Caucasus: Weise (1885); Heyden et al. (1891, 1906); Winkler (1927).

***Ceratomegilla notata* (Laicharting, 1781)**

*Coccinella notata* Laicharting, 1781

**Literature data.** Armenia: Kovář (2007). Caucasus: Heyden et al. (1906); Winkler (1927).

***Ceratomegilla schelkovnikovi* (Dobzhansky, 1927)**

*Semiadalia schelkovnikovi* Dobzhansky, 1927

**Literature data.** Armenia: Dobzhansky (1927) (lake Sevan, Yerevan); Iablokoff-Khnzorian (1983); Kovář (2007).

**Remarks.** Dobzhansky's original spelling of the specific epithet is 'shelkovnikovi'. Type locality: lake Sevan (Goktsha-See) in Armenia.

***Ceratomegilla schneideri* (Weise, 1878)**

*Coccinella schneideri* Weise, 1878

**Literature data.** Armenia: Schneider and Leder (1879) (Alexandrapol (=Gyumri)); Jacobson (1915); Iablokoff-Khnzorian (1983); Kovář (2007). Caucasus: Weise (1879) (as *Adalia schneideri* Ws.); Weise (1885); Heyden et al. (1891, 1906); Winkler (1927).



***Ceratomegilla undecimnotata* (Schneider, 1792)**

*Coccinella undecimnotata* Schneider, 1792

*Coccinella Saliana* Faldermann, 1837

*Coccinella maritima* Ménétries, 1832

**Literature data.** Armenia: Iablokoff-Khnzorian (1982); Kovář (2007); Ceryngier et al. (2023) (Tigranashen, as a host of a hymenopterous parasitoid *Dinocampus coccinellae* (Schränk)). Transcaucasia: Faldermann (1837) (as *Coccinella Saliana* Fald. and *C. maritima* Ménétries). Caucasus: Weise (1879) (as *Adalia undecimnotata* Schneid.); Weise (1885); Radde (1899).

***Coccinella alpigrada* (Iablokoff-Khnzorian, 1957)**

*Adalia alpigrada* Iablokoff-Khnzorian, 1957

**Literature data.** Armenia: Iablokoff-Khnzorian (1957, 1982, 1983); Kovář (2007).

**Remarks.** Described from Armenia. Type locality: Yanykh, Martuni region (province Gegharkunik).

***Coccinella magnifica* Redtenbacher, 1843**

*Coccinella distincta* Faldermann, 1837

**New data.** Kotayk: • Arzakan, 40.4494°N, 44.6063°E, 1489 m a.s.l., 07.06.2021, 5 exx. (leg. M. Arakelyan).

**Literature data.** Armenia: Kovář (2007). Transcaucasia: Faldermann (1837) (as *C. distincta*); Iablokoff-Khnzorian (1983). Caucasus: Weise (1885) (as *C. distincta* Faldermann); Heyden et al. (1891, 1906) (as *C. distincta* Fald.); Winkler (1927) (as *C. divaricata* Ol.).

***Coccinella quinquepunctata* Linnaeus, 1758**

*Coccinella tripunctata* Rossi, 1790

**Literature data.** Armenia: Victor (1837) (as *Coccinella 3 punctata* Rossi); Mulsant (1866) (as *Coccinella tripunctata* Rossi); Kovář (2007).

**Remarks.** Kovář (2007) considers *Coccinella tripunctata* Rossi, 1790 a synonym of *C. quinquepunctata*. However, according to Crotch (1874), *C. tripunctata* Rossi is a variety of *Coccinella undecimpunctata* L. Iablokoff-Khnzorian (1983) states that *C. quinquepunctata* is present in the Caucasus, but not in Armenia.

***Coccinella septempunctata* Linnaeus, 1758**

**New data.** Syunik: • Shenatagh, 39.38°N, 46.1322°E, 2500 m a.s.l., 18.06.2021, 5 exx. (leg. A. Ghazaryan); • Kajaran, 39.1511°N, 46.16°E, 1950 m a.s.l., 13.06.2021, 14 exx. (leg. A. Ghazaryan); • Zvaravank Monastery, 39.0472°N, 46.1694°E, 1815 m a.s.l., 16.05.2022, 1 ex. (leg. M. Arakelyan); • Meghri, 38.9029°N, 46.2445°E, 610 m a.s.l., 15.05.2022, 4 exx. (leg. M. Arakelyan); • Lichk, 39.6073°N, 46.1113°E, 1929 m



a.s.l., 17.05.2022, 1 ex. (leg. M. Arakelyan); Ararat: • Azat reservoir, 40.07138°N, 44.6161°E, 1025 m a.s.l., 20.09.2021, 1 ex. (leg. M. Arakelyan); • Khosrov, 40.0458°N, 44.8982°E, 1465 m a.s.l., 28.05.2021, 2 ex. (leg. M. Arakelyan); Lori: • Mets Parni, 40.8372°N, 44.1091°E, 1680 m a.s.l., 05.06.2020, 22.06.2020, 2 ex. (leg. M. Arakelyan); Vayots Dzor: • Hors, 39.8625°N, 45.2302°E, 1694 m a.s.l., 12.06.2021, 1 ex. (leg. M. Arakelyan); • Horbategh, 39.8902°N, 45.3541°E, 1850 m a.s.l., 04.06.2023, 3 exx. (leg. M. Arakelyan); Tavush: • Voskepar, 41.0647°N, 45.0575°E, 850 m a.s.l., 26.09.2020, 1 ex. (leg. M. Arakelyan); Gegharkunik: • Dzoragyugh, 40.1694°N, 45.1986°E, 2003 m a.s.l., 06.06.2021, 1 ex. (leg. M. Arakelyan); Kotayk: • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., June 2023, 3 exx. (leg. M. Arakelyan).

**Literature data.** Armenia: Jacobson (1915) (the whole Caucasus); Kovář (2007). Caucasus: Victor (1837).

### ***Coccinella undecimpunctata* Linnaeus, 1758**

**Literature data.** Armenia: Radde (1899) (Meghri); Jacobson (1915).

### ***Coccinula quatuordecimpustulata* (Linnaeus, 1758)**

*Coccinella quatuordecimpustulata* Linnaeus, 1758

**New data.** Lori: • Mets Parni, 40.8372°N, 44.1091°E, 1680 m a.s.l., 22.08.2018, 9 exx. (leg. M. Arakelyan); Syunik: • Lichk, 39.6073°N, 46.1113°E, 1929 m a.s.l., 17.05.2022, 1 ex. (leg. M. Arakelyan); Kotayk: • Gegard, 40.1553°N, 44.7913°E, 1759 m a.s.l., 22.05.2022, 1 ex. (leg. M. Arakelyan); • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., June 2023, 2 exx. (leg. M. Arakelyan); Ararat: • Khosrov, 40.0458°N, 44.8982°E, 1465 m a.s.l., 28.05.2021, 2 exx. (leg. M. Arakelyan); Vayots Dzor: • Hors, 39.8625°N, 45.2302°E, 1694 m a.s.l., 12.06.2021, 1 ex. (leg. M. Arakelyan).

**Literature data.** Armenia: Radde (1899) (Helenowka (= Sevan)); Jacobson (1915); Iablokoff-Khnzorian (1982, 1983); Kovář (2007).

### ***Coccinula sinuatomarginata* (Faldermann, 1837)**

*Coccinella sinuato-marginata* Faldermann, 1837

**New data.** Syunik: • Lichk, 39.6073°N, 46.1113°E, 1929 m a.s.l., 17.05.2022, 1 ex. (leg. M. Arakelyan).

**Literature data.** Armenia: Jacobson (1915); Iablokoff-Khnzorian (1982, 1983); Kovář (2007). Transcaucasia: Faldermann (1837) (as *Coccinella sinuato-marginata*). Caucasus: Mulsant (1850, 1866) (as *Coccinella sinuato-marginata* Faldermann); Weise (1879, 1885); Heyden et al. (1906) (as *Synharmonia sinuatomarginata* Fald.).

### ***Halyzia sedecimguttata* (Linnaeus, 1758)**

*Coccinella sedecimguttata* Linnaeus, 1758

**New data.** Kotayk: • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., July 2021, 1 ex. (leg. M. Arakelyan).



**Literature data.** Armenia: Iablokoff-Khnzorian (1982); Kovář (2007). Caucasus: Winkler (1927); Iablokoff-Khnzorian (1983).

***Harmonia axyridis* (Pallas, 1773)**

*Coccinella axyridis* Pallas, 1773

**New data.** Kotayk: • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., July 2021, 2 exx. (leg. M. Arakelyan); • Hankavan, 40.6019°N, 44.6185°E, 1990 m a.s.l., 25.06.2021, 1 ex. (leg. M. Arakelyan); Shirak: • Gyumri, 40.7942°N, 43.8452°E, 1509 m a.s.l., 15.10.2020, 1 ex. (leg. M. Arakelyan); Yerevan: • Yerevan State University, 40.1817°N, 44.5261°E, 990 m a.s.l., 27.07.2020, 1 ex. (leg. M. Arakelyan); Aragatsotn: • Karbi, 40.3233°N, 44.3800°E, 1303 m a.s.l., 22.06.2019, 1 ex. (A. Ghazaryan); Lori: • Amrakits, 40.0002°N, 44.4303°E, 1380 m a.s.l., 31.05.2023, 2 exx. (leg. M. Arakelyan); • Pushkino, 40.9688°N, 44.4144°E, 1450 m a.s.l., 26.06.2023, 1 ex. (leg. M. Arakelyan); • Sanahin, 41.0873°N, 44.6661°E, 1016 m a.s.l., 28.05.2023, 1 ex. (leg. M. Arakelyan); • Privolnoye, 41.1709°N, 44.4415°E, 1629 m a.s.l., 14.06.2020, 1 ex. (leg. M. Kalashian); • Gyulagarak, 40.9620°N, 44.4696°E, 1358 m a.s.l., 09.07.2020, 15.07.2020, 20.07.2020, 3 exx. (leg. M. Kalashian); • Kachachkut, 41.1600°N, 44.5852°E, 2510 m a.s.l., 18.07.2021, 1 ex. (leg. M. Kalashian); • Margahovit, 40.70933°N, 44.66645°E, 1918 m a.s.l., 04.07.2021, 1 ex. (leg. M. Kalashian); • Odzun, 41.038577°N, 44.627781°E, 1034 m a.s.l., 30.05.2021, 1 ex. (leg. M. Kalashian); Gegharkunik: • Aygut, 40.6878°N, 45.1473°E, 1268 m a.s.l., 18.07.2020, 1 ex. (leg. M. Kalashian); • Shorzha, 40.49845°N, 45.29701°E, 1938 m a.s.l., 12.07.2021, 1 ex. (leg. M. Kalashian); Ararat: • Sipanik, 40.0796°N, 44.3637°E, 843 m a.s.l., 08.09.2020, 1 ex. (leg. M. Kalashian); • Armash, 39.796°N, 44.8415°E, 1203 m a.s.l., 07.08.2021, 1 ex. (leg. M. Kalashian); Tavush: • Gosh, 40.7409°N, 45.0334°E, 1080 m a.s.l., 18.06.2021, 1 ex. (leg. M. Kalashian).

**Literature data.** Armenia: Kalashian et al. (2017, 2019).

***Hippodamia tredecimpunctata* (Linnaeus, 1758)**

*Coccinella tredecimpunctata* Linnaeus, 1758

*Hippodamia signata* Faldermann, 1837

**New data.** Vayots Dzor: • Spitakavor church, 39.8297°N, 45.3644°E, 540 m a.s.l., 12.08.2020, 1 ex. (leg. M. Arakelyan).

**Literature data.** Armenia: Jacobson (1915) (as *H. tredecimpunctata* subsp. *signata* Fald.) (Yerevan); Kovář (2007). Transcaucasia: Faldermann (1837) (as *H. signata* Fald.). Caucasus: Weise (1885); Heyden et al. (1891, 1906); Winkler (1927); Iablokoff-Khnzorian (1982, 1983).

***Hippodamia variegata* (Goeze, 1777)**

*Coccinella variegata* Goeze, 1777

**New data.** Gegharkunik: • Tsovak, 40.1819°N, 45.635°E, 1920 m a.s.l., 04.06.2021, 2 exx. (leg. M. Arakelyan); Ararat: • Ranchpar, 40.0253°N, 44.3703°E,



834 m a.s.l., 05.06.2021, 1 ex. (leg. M. Arakelyan); • Khosrov, 40.0458°N, 44.8982°E, 1465 m a.s.l., 28.05.2021, 1 ex. (leg. M. Arakelyan); Vayots Dzor: • Hors, 39.8625°N, 45.2302°E, 1694 m a.s.l., 12.06.2021, 2 exx. (leg. M. Arakelyan); Kotayk: • Hankavan, 40.6019°N, 44.6185°E, 1990 m a.s.l., 25.06.2021, 1 ex. (leg. M. Arakelyan); Tavush: • Voskepar, 41.0647°N, 45.0575°E, 850 m a.s.l., 26.09.2020, 2 exx. (leg. M. Arakelyan).

**Literature data.** Armenia: Radde (1899) (Echmiadzin); Jacobson (1915) (Yerevan); Kovář (2007); Ceryngier et al. (2023) (Nzhdeh, as a host of *D. coccinellae*).

### ***Myrrha octodecimguttata* (Linnaeus, 1758)**

*Coccinella octodecimguttata* Linnaeus, 1758

**Literature data.** Armenia: Iablokoff-Khnzorian (1983); Kovář (2007).

### ***Myzia oblongoguttata* (Linnaeus, 1758)**

*Coccinella oblongoguttata* Linnaeus, 1758

**Literature data.** Armenia: Iablokoff-Khnzorian (1982, 1983). Caucasus: Winkler (1927) (as *Paramysia oblongoguttata* L.).

### ***Oenopia conglobata* (Linnaeus, 1758)**

*Coccinella conglobata* Linnaeus, 1758

**New data.** Gegharkunik: • Akunk, 40.1572°N, 45.7263°E, 1965 m a.s.l., 19.10.2020, 3 exx. (leg. M. Arakelyan); Ararat: • Ranchpar, 40.0252°N, 44.3702°E, 834 m a.s.l., 05.06.2021, 1 ex. (leg. M. Arakelyan); Kotayk: • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., July 2021, 1 ex. (leg. M. Arakelyan); Armavir: • river Kasagh, 40.1046°N, 44.2359°E, 870 m a.s.l., 01.06.2021, 1 ex. (leg. M. Arakelyan); Syunik: • Lichk, 39.6073°N, 46.1113°E, 1929 m a.s.l., 17.05.2022, 2 exx. (leg. M. Arakelyan).

**Literature data.** Armenia: Iablokoff-Khnzorian (1972); Kovář (2007). Transcaucasia: Iablokoff-Khnzorian (1983).

### ***Oenopia impustulata* (Linnaeus, 1767)**

*Coccinella impustulata* Linnaeus, 1767

*Coccinella caucasica* Motschulsky, 1837 (synonymized by Kovář (2007))

**Literature data.** Armenia: Kovář (2007). Transcaucasia: Iablokoff-Khnzorian (1983). Caucasus: Victor (1837) (as *Coccinella caucasica*); Mulsant (1850) (as *Harmonia caucasica* Motschoulsky); Heyden et al. (1891) (as *Harmonia conglobata* v. *caucasica* Motsch.); Heyden et al. (1906) (as *Synharmonia conglobata* v. *caucasica* Motsch.); Iablokoff-Khnzorian (1972).



***Oenopia lyncea agnatha* (Rosenhauer, 1847)**

*Coccinella lyncea agnatha* Rosenhauer, 1847

**Literature data.** Armenia: Iablokoff-Khnzorian (1982); Kovář (2007). Transcaucasia: Iablokoff-Khnzorian (1983).

***Oenopia oncina* (Olivier, 1808)**

*Coccinella oncina* Olivier, 1808

*Coccinella asiatica* Weise, 1885

*Coccinella persica* Faldermann, 1837

**Literature data.** Armenia: Schneider and Leder (1879) (as *Coccinella persica* Faldermann) (Echmiadzin, Tarstschai); Weise (1885) (as *Harmonia lyncea* v. *asiatica* Ws. and *H. lyncea* v. *persica* Faldermann); Jacobson (1915) (Yerevan); Kovář (2007). Transcaucasia: Faldermann (1837) (as *Coccinella persica* Faldermann); Heyden et al. (1891) (as *Harmonia lyncea* v. *asiatica* Ws.); Heyden et al. (1906) (as *Synharmonia oncina* a. *asiatica* Ws.); Iablokoff-Khnzorian (1983).

***Propylea quatuordecimpunctata* (Linnaeus, 1758)**

*Coccinella quatuordecimpunctata* Linnaeus, 1758

**New data.** Armavir: • river Kasagh, 40.1046°N, 44.2359°E, 870 m a.s.l., 01.06.2021, 2 exx. (leg. M. Arakelyan); Ararat: • Khosrov, 40.0458°N, 44.8982°E, 1465 m a.s.l., 28.05.2021, 3 exx. (leg. M. Arakelyan); Syunik: • Lichk, 39.6073°N, 46.1113°E, 1929 m a.s.l., 17.05.2022, 3 exx. (leg. M. Arakelyan); Aragatsotn: • Karbi, 40.3233°N, 44.3800°E, 1303 m a.s.l., 22.06.2019, 6 exx. (leg. M. Arakelyan); Lori: • Mets Parni, 40.8372°N, 44.1091°E, 1680 m a.s.l., 22.08.2018, 1 ex. (leg. M. Arakelyan); Kotayk: • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., June 2023, 3 exx. (leg. M. Arakelyan).

**Literature data.** Armenia: Radde (1899) (as *Halyzia quatuordecimpunctata* L.) (Yerevan); Jacobson (1915) (Yerevan); Kovář (2007); Ceryngier et al. (2023) (Khor Virap, as a host of *D. coccinellae*). Caucasus: Winkler (1927).

***Psyllobora vigintiduopunctata* (Linnaeus, 1758)**

*Coccinella vigintiduopunctata* Linnaeus, 1758

**New data.** Kotayk: • Tsaghkadzor, 40.5313°N, 44.7249°E, 1841 m a.s.l., July 2021, 1 ex., June 2023, 5 exx. (leg. M. Arakelyan); Syunik: • Lichk, 39.6073°N, 46.1113°E, 1929 m a.s.l., 17.05.2022, 2 exx. (leg. M. Arakelyan); Lori: • Mets Parni, 40.8372°N, 44.1091°E, 1680 m a.s.l., 22.08.2018, 3 exx. (leg. M. Arakelyan); Aragatsotn: • Karbi, 40.3233°N, 44.3800°E, 1303 m a.s.l., 22.06.2019, 7 exx. (leg. M. Arakelyan).

**Literature data.** Armenia: Schneider and Leder (1879) (Echmiadzin, Yerevan); Radde (1899) (as *Halyzia vigintiduopunctata* L.) (Yerevan); Jacobson (1915) (Yerevan); Kovář (2007).



**[*Tytthaspis gebleri* (Mulsant, 1850)]**

*Micraspis gebleri* Mulsant, 1850

*Coccinella lineola* Gebler, 1843

**Literature data.** Caucasus: Winkler (1927) (as *Tytthaspis lineola* Gebl.).

***Tytthaspis sedecimpunctata* (Linnaeus, 1761), new country record**

*Coccinella sedecimpunctata* Linnaeus, 1761

**New data.** Lori: • Mets Parni, 40.8372°N, 44.1091°E, 1680 m a.s.l., 22.08.2018, 2 exx. (leg. M. Arakelyan); Syunik: • Lichk, 39.6073°N, 46.1113°E, 1929 m a.s.l., 17.05.2022, 1 ex. (leg. M. Arakelyan).

**Remark.** To the best of our knowledge, *T. sedecimpunctata* has not previously been reported from Armenia.

***Vibidia duodecimguttata* (Poda von Neuhaus, 1761)**

*Coccinella duodecimguttata* Poda von Neuhaus, 1761

**New data.** Vayots Dzor: • Hors, 39.8625°N, 45.2302°E, 1694 m a.s.l., 23.07.2021, 1 ex. (leg. M. Arakelyan).

**Literature data.** Armenia: Kovář (2007). Transcaucasia: Iablokoff-Khnzorian (1983).

**Tribe Epilachnini Mulsant, 1846**

***Henosepilachna argus* (Geoffroy, 1785)**

*Coccinella argus* Geoffroy, 1785

**Literature data.** Armenia: Iablokoff-Khnzorian (1980, 1981, 1983) (Araks valley in Armenia); Kovář (2007). Caucasus: Radde (1899); Jacobson (1915).

***Subcoccinella vigintiquatuorpunctata* (Linnaeus, 1758)**

*Coccinella vigintiquatuorpunctata* Linnaeus, 1758

*Coccinella colchica* Motschulsky, 1839

**New data.** Kotayk: • Arzakan, 40.4494°N, 44.6063°E, 1489 m a.s.l., 07.06.2021, 1 ex. (leg. M. Arakelyan).

**Literature data.** Armenia: Schneider and Leder (1879) (Alexandrapol (=Gyumri)); Jacobson (1915) (Yerevan); Iablokoff-Khnzorian (1980, 1983); Kovář (2007). Caucasus: Mulsant (1850) (as *Epilachna colchica* Motschoulsky); Heyden et al. (1906); Winkler (1927).



### **Tribe Scymnini Mulsant, 1846**

#### ***Clitostethus arcuatus* (Rossi, 1794)**

*Coccinella arcuata* Rossi, 1794

**Literature data.** Armenia: Iablokoff-Khnzorian (1983) (in the Caucasus reaches the Araks valley); Kovář (2007). Caucasus: Winkler (1927).

#### **[*Nephus (Bipunctatus) bipunctatus* (Kugelann, 1794)]**

*Scymnus bipunctatus* Kugelann, 1794

**Literature data.** Transcaucasia: Iablokoff-Khnzorian (1983).

#### ***Nephus (Nephus) ludyi* (Weise, 1879)**

*Scymnus ludyi* Weise, 1879

*Nephus ponticus* Iablokoff-Khnzorian, 1970

**Literature data.** Armenia: Iablokoff-Khnzorian (1970a, 1983) (as *N. ponticus* Iablokoff-Khnzorian, 1970) (Yerevan); Kovář (2007).

#### ***Nephus (Nephus) quadrimaculatus* (Herbst, 1783)**

*Sphaeridium quadrimaculatum* Herbst, 1783

**Literature data.** Armenia: Iablokoff-Khnzorian (1983) (N Armenia, Yerevan).

#### ***Nephus (Sidis) caucasicus* (Weise, 1929)**

*Scymnus caucasicus* Weise, 1929

*Scymnus plagiatus* Weise, 1878

**Literature data.** Armenia: Schneider and Leder (1879) (as *Scymnus plagiatus* Weise nov. sp.) (Yerevan); Weise (1879, 1885) (as *Scymnus (Nephus) plagiatus* Ws.) (Yerevan); Jacobson (1915) (as *N. plagiatus* Ws.) (Yerevan); Iablokoff-Khnzorian (1983) Yerevan and its vicinity); Kovář (2007). Caucasus: Heyden et al. (1891, 1906) (as *N. plagiatus*).

#### ***Scymniscus biflammulatus* (Motschulsky, 1837)**

*Scymnus biflammulatus* Motschulsky, 1837

**Literature data.** Armenia: Iablokoff-Khnzorian (1983) (almost whole Caucasus); Kovář (2007). Caucasus: Weise (1879, 1885) (as *Scymnus biflammulatus* Motsch.); Heyden et al. (1891, 1906) (as *Sidis biflammulatus* Motsch.); Jacobson (1915) (as *Sidis biflammulatus* Motsch.); Winkler (1927) (as *Sidis biflammulatus* Mtsch.).



***Scymniscus biguttatus* (Mulsant, 1850)**

*Scymnus biguttatus* Mulsant, 1850

*Scymnus bipustulatus* Motschulsky, 1837

**Literature data.** Armenia: Jacobson (1915) (as *Sidis biguttatus* Muls.) (Yerevan). Araks valley: Heyden et al. (1906) (as *Sidis biguttatus* a. *4-guttatus* Fleisch). Caucasus: Weise (1879) (as *Scymnus (Sidis) bipustulatus* Motsch.); Weise (1885) (as *Scymnus (Sidis) biguttatus* Muls.); Winkler (1927) (as *Sidis biguttatus* Muls.).

***Scymnus (Mimopullus) pharaonis* Motschulsky, 1851**

*Scymnus pharaonis* Motschulsky, 1851

*Scymnus (Pullus) araraticus* Iablokoff-Khnzorian, 1969

**Literature data.** Armenia: Iablokoff-Khnzorian (1969, 1972, 1983) (as *Scymnus (Pullus) araraticus* Iablokoff-Khnzorian, 1969) (Kapan region, Yerevan vicinity); Kovář (2007).

***Scymnus (Neopullus) haemorrhoidalis* Herbst, 1797**

*Scymnus haemorrhoidalis* Herbst, 1797

**Literature data.** Armenia: Schneider and Leder (1879) (Yerevan); Jacobson (1915) (Yerevan); Iablokoff-Khnzorian (1983) (whole Caucasus); Kovář (2007).

***Scymnus (Neopullus) limbatus* Stephens, 1832**

*Scymnus limbatus* Stephens, 1832

**Literature data.** Armenia: Iablokoff-Khnzorian (1972, 1983) (Yerevan); Kovář (2007).

***Scymnus (Neopullus) testaceus* Motschulsky, 1837**

*Scymnus testaceus* Motschulsky, 1837

**Literature data.** Armenia: Iablokoff-Khnzorian (1972, 1983) (whole Caucasus). Caucasus: Weise (1879); Heyden et al. (1891, 1906); Radde (1899).

***Scymnus (Pullus) argutus* Mulsant, 1850**

*Scymnus argutus* Mulsant, 1850

**Literature data.** Armenia: Mulsant (1850); Weise (1885); Heyden et al. (1891); Iablokoff-Khnzorian (1972); Kovář (2007). Araks valley: Iablokoff-Khnzorian (1983). Caucasus: Winkler (1927).

**Remark.** Described from Armenia without specifying exact locality (l'Arménie (collect. Motschoulsky)) (Mulsant 1850).



**[*Scymnus (Pullus) auritus* Thunberg, 1795]**

*Scymnus auritus* Thunberg, 1795

**Literature data.** Caucasus: Winkler (1927).

***Scymnus (Pullus) fraxini* Mulsant, 1850**

*Scymnus fraxini* Mulsant, 1850

**Literature data.** Armenia: Kovář (2007). Caucasus: Mulsant (1850); Heyden et al. (1891, 1906); Winkler (1927).

***Scymnus (Pullus) subvillosus* (Goeze, 1777)**

*Coccinella subvillosa* Goeze, 1777

**Literature data.** Armenia: Schneider and Leder (1879) (Yerevan); Jacobson (1915) (Yerevan); Kovář (2007). Caucasus: Heyden et al. (1891); Iablokoff-Khnzorian (1983).

***Scymnus (Pullus) suturalis* Thunberg, 1795**

*Scymnus suturalis* Thunberg, 1795

**Literature data.** Armenia: Kovář (2007). Caucasus: Iablokoff-Khnzorian (1983).

***Scymnus (Scymnus) apetzi* Mulsant, 1846**

*Scymnus Apetzii* Mulsant, 1846

*Scymnus stigmatopterus* Faldermann, 1837 (synonymized by Fürsch et al. (1967))

*Scymnus corpulentus* Mulsant, 1850 (synonymized by Fürsch et al. (1967))

**Literature data.** Armenia: Schneider and Leder (1879) (Echmiadzin, Yerevan); Radde (1899) (Yerevan); Jacobson (1915) (Yerevan); Fürsch et al. (1967) (lectotype of *S. stigmatopterus* Fald.) (Sadaraki); Iablokoff-Khnzorian (1983) (in Transcaucasia the most common *Scymnus* species); Kovář (2007). Transcaucasia: Faldermann (1837) (as *S. stigmatopterus* Fald.); Mulsant (1850) (as *S. corpulentus*). Caucasus: Heyden et al. (1891) (as *S. corpulentus* Muls.).

**Remark.** Kovář (2007) places *S. stigmatopterus* among the taxa incertae sedis.

***Scymnus (Scymnus) flavicollis* Redtenbacher, 1843**

*Scymnus frontalis* v. *araxicola* Fleischer, 1900

**Literature data.** Armenia: Kovář (2007). Araks valley: Fleischer (1900) (as *S. frontalis* v. *araxicola*); Heyden et al. (1906) (as *S. frontalis* a. *araxicola* Fleisch.); Winkler (1927) (as *S. frontalis* a. *araxicola* Fleisch.); Fürsch et al. (1967) (as *S. araxicola* Fleischer).



***Scymnus (Scymnus) frontalis* (Fabricius, 1787)**

*Coccinella frontalis* Fabricius, 1787

*Scymnus quadrivulneratus* Mulsant, 1850 (synonymized by Fürsch et al. (1967))

**Literature data.** Armenia: Schneider and Leder (1879) (Helenowka (=Sevan)); Jacobson (1915) (Yerevan); Kovář (2007). Caucasus: Heyden et al. (1891) (as *S. frontalis bimaculatus* Mot.); Iablokoff-Khnzorian (1983); Winkler (1927) (as *S. 4-vulneratus* Muls.).

***Scymnus (Scymnus) inderihensis* Mulsant, 1850**

**Literature data.** Armenia: Iablokoff-Khnzorian (1983).

***Scymnus (Scymnus) interruptus* (Goeze, 1777)**

*Coccinella interrupta* Goeze, 1777

**Literature data.** Armenia: Iablokoff-Khnzorian (1983); Kovář (2007).

***Scymnus (Scymnus) magnomaculatus* Fürsch, 1958**

*Scymnus quadriguttatus* Capra, 1924

**Literature data.** Armenia: Iablokoff-Khnzorian (1983) (as *S. quadriguttatus* Capra, 1924); Kovář (2007).

**[*Scymnus (Scymnus) manipulus* Fürsch & Kreissl, 1967]**

**Literature data.** Araks valley: Fürsch et al. (1967).

***Scymnus (Scymnus) pallipes* Mulsant, 1850**

**Literature data.** Armenia: Fürsch et al. (1967) (Saderaki, Suhulta). Caucasus: Mulsant (1850); Heyden et al. (1891); Heyden et al. (1906) (as *S. frontalis pallipes* Muls.); Winkler (1927) (as *S. frontalis* a. *pallipes* Muls.).

**Remark.** Fürsch et al. (1967) report that two paralectotypes of this species are from Saderaki and Suhulta in Armenia. The former name certainly refers to Sadarak in Azerbaijani exclave of Nakhchivan, while the location of the latter is unclear to us (Fürsch et al. (1967) also pointed out that the name of the locality on the label is difficult to decipher).

***Scymnus (Scymnus) rubromaculatus* (Goeze, 1777)**

*Coccinella rubromaculata* Goeze, 1777

**Literature data.** Armenia: Schneider and Leder (1879) (Echmiadzin, Yerevan); Radde (1899) (Echmiadzin); Jacobson (1915) (Yerevan).



**[*Scymnus* (*Scymnus*) *suffrianioides apetzoides* Capra & Fürsch, 1967]**

*Scymnus apetzoides* Capra & Fürsch, 1967

**Literature data.** Caucasus: Iablokoff-Khnzorian (1983).

**Tribe Platynaspini Mulsant, 1846**

***Platynaspis luteorubra* (Goeze, 1777)**

*Coccinella luteorubra* Goeze, 1777

*Scymnus spectabilis* Faldermann, 1837

**Literature data.** Armenia: Schneider and Leder (1879) (Yerevan); Weise (1885); Jacobson (1915) (Yerevan); Kovář (2007). Transcaucasia: Faldermann (1837) (as *Scymnus spectabilis* Fald.). Caucasus: Winkler (1927); Iablokoff-Khnzorian (1983).

**Tribe Hyperaspidini Mulsant, 1846**

**[*Hyperaspis campestris* (Herbst, 1783)]**

*Coccinella campestris* Herbst, 1783

**Literature data.** Caucasus: Winkler (1927).

**[*Hyperaspis caucasica* Crotch, 1874]**

**Literature data.** Caucasus: Heyden et al. (1891) (as *Oxynychus erythrocephalus caucasicus* Crotch).

**[*Hyperaspis erythrocephala* (Fabricius, 1787)]**

*Coccinella erythrocephala* Fabricius, 1787

**Literature data.** Caucasus: Heyden et al. (1906) (as *Oxynychus erythrocephalus* a. *Guillardi* Muls.); Winkler (1927) (as *Oxynychus erythrocephalus* F.).

***Hyperaspis femorata* (Motschulsky, 1837)**

*Coccinella femorata* Motschulsky, 1837

*Hyperaspis desertorum* v. *collaris* Fleischer, 1900 (synonymized by Iablokoff-Khnzorian (1971))

*Hyperaspis inaudax* Mulsant, 1853 (synonymized by Iablokoff-Khnzorian (1971))

**Literature data.** Armenia: Weise (1885) (as *H. reppensis* v. *femorata* Motsch.); Iablokoff-Khnzorian (1971, 1983); Kovář (2007). Araks valley: Radde (1899)



(as *H. reppensis* var. *femorata* Mot.); Fleischer (1900) (as *H. desertorum* v. *collaris*); Heyden et al. (1906) (as *Hyperaspis desertorum* a. *collaris* Fleisch.). Caucasus: Victor (1837); Mulsant (1850); Mulsant (1853) (as *H. inaudax*); Heyden et al. (1891, 1906) (as *H. reppensis* v. *femorata* Motsch. and *H. reppensis inaudax* Muls.).

### ***Hyperaspis histeroides* (Faldermann, 1837)**

*Scymnus histeroides* Faldermann, 1837

**Literature data.** Armenia: Iablokoff-Khnzorian (1971, 1983); Kovář (2007). Transcaucasia: Faldermann (1837) (as *Scymnus histeroides*).

### **[*Hyperaspis polita* Weise, 1885]**

**Literature data.** Caucasus: Heyden et al. (1906) (as *H. transversoguttata* v. *10-guttata* Fleischer); Winkler (1927) (as *H. transversoguttata* a. *10 guttata* Fleisch.); Iablokoff-Khnzorian (1971).

### ***Hyperaspis transversoguttata* Weise, 1878**

**Literature data:** Armenia: Iablokoff-Khnzorian (1971) (Meghri region); Kovář (2007). Lower Araks: Iablokoff-Khnzorian (1983). Caucasus: Weise (1879); Heyden et al. (1891, 1906).

### **Tribe Diomini Gordon, 1999**

#### ***Diomus rubidus* (Motschulsky, 1837)**

*Scymnus rubidus* Motschulsky, 1837

**Literature data.** Armenia: Kovář (2007). Eastern Caucasus: Iablokoff-Khnzorian (1983). Caucasus: Heyden et al. (1891, 1906); Winkler (1927).

### **Tribe Chilacorini Mulsant, 1846**

#### ***Chilocorus bipustulatus* (Linnaeus, 1758)**

*Coccinella bipustulata* Linnaeus, 1758

**Literature data.** Armenia: Schneider and Leder (1879) (Echmiadzin); Radde (1899) (Echmiadzin); Jacobson (1915) (Yerevan); Kovář (2007). Caucasus: Iablokoff-Khnzorian (1983).

### **[*Chilocorus renipustulatus* (Scriba, 1791)]**

*Coccinella renipustulata* Scriba, 1791

**Literature data.** Transcaucasia: Iablokoff-Khnzorian (1983).



***Exochomus octosignatus* (Gebler, 1830)**

*Coccinella octosignata* Gebler, 1830

**Literature data.** Armenia: Weise (1885); Jacobson (1915) (Yerevan); Tobias (1975) (Yerevan, as a host of *D. coccinellae*); Iablokoff-Khnzorian (1983); Kovář (1995, 2007). Araks valley: Radde (1899). Caucasus: Heyden et al. (1906) (as *Brumus 8-signatus* a. *conjunctus* Fleisch.).

***Exochomus quadriguttatus* Fleischer, 1900**

**Literature data.** Armenia: Iablokoff-Khnzorian (1983) (as *E. quadripustulatus* ssp. *quadriguttatus*); Kovář (1995, 2007). Araks valley: Fleischer (1900) (as *E. 4-pustulatus* v. *4-guttatus*).

***Exochomus quadripustulatus* (Linnaeus, 1758)**

*Coccinella quadripustulata* Linnaeus, 1758

**Literature data.** Armenia: Jacobson (1915) (Yerevan); Kovář (1995, 2007). Transcaucasia: Iablokoff-Khnzorian (1983). Caucasus: Weise (1885) (as *Exochomus quadripustulatus* v. *ibericus* Motsch.); Heyden et al. (1891, 1906) (as *Exochomus quadripustulatus* v. *ibericus* Motsch.).

***Exochomus undulatus* Weise, 1878**

**Literature data.** Armenia: Iablokoff-Khnzorian (1983). Caucasus: Weise (1879, 1885); Heyden et al. (1891, 1906); Winkler (1927) (as *Anexochochomus undulatus* Ws.).

***Parexochomus melanocephalus* (Zubkov, 1833)**

*Coccinella melanocephala* Zubkov, 1833

**Literature data.** Armenia: Iablokoff-Khnzorian (1983); Kovář (2007). Caucasus: Heyden et al. (1891).

***Parexochomus nigripennis* (Erichson, 1843)**

*Chilocorus nigripennis* Erichson, 1843

**Literature data.** Armenia: Jacobson (1915) (as *Exochomus flavipes* subsp. *nigripennis* Er.) (Yerevan); Iablokoff-Khnzorian (1983). Araks valley: Radde (1899) (as *Exochomus flavipes* var. *nigripennis* Er.).

***Parexochomus nigromaculatus* (Goeze, 1777)**

*Coccinella nigromaculata* Goeze, 1777  
*Exochomus collaris* Küster, 1849



**Literature data.** Armenia: Schneider and Leder (1879) (Echmiadzin, Yerevan, Tarstschai); Radde (1899) (as *Exochomus flavipes* Thnb.) (Yerevan, Echmiadzin); Jacobson 1915) (as *Exochomus flavipes* Thunb.) (Yerevan); Kovář (2007). Caucasus: Heyden et al. (1891, 1906) (as *Exochomus flavipes* v. *collaris* Küst.); Iablokoff-Khnzorian (1983).

***Parexochomus pubescens* (Küster, 1848)**

*Exochomus pubescens* Küster, 1848

**Literature data.** Armenia: Jacobson (1915) (Yerevan). Araks valley: Radde (1899); Iablokoff-Khnzorian (1983).

**Tribe Sticholotidini Weise, 1901**

***Coelopterus armeniacus* Weise, 1894**

**Literature data.** Armenia: Jacobson (1915) (Yerevan); Winkler (1927) (Yerevan); Iablokoff-Khnzorian (1983) (as a synonym of *C. salinus* Mulsant, 1853); Kovář (2007). Araks valley: Weise (1894); Heyden et al. (1906).

***Pharoscymnus armenus* Iablokoff-Khnzorian, 1970**

**Literature data.** Armenia: Iablokoff-Khnzorian (1970b, 1983); Kovář (2007).

**Remarks.** Described based on specimens from the Kapan region (Syunik province) (holotype) and Yeghegnadzor region (Vayots Dzor province) (paratype) in Armenia.

**Tribe Coccidulini Mulsant, 1846**

***Coccidula lithophiloides* Reitter, 1890**

**Literature data.** Armenia: Jacobson (1915) (Yerevan); Iablokoff-Khnzorian (1983) (Araks valley from Yerevan to Meghri); Kovář (2007); Szawaryn et al. (2021) (Echmiadzin, Yerevan). Araks: Heyden et al. (1891, 1906); Winkler (1927).

***Coccidula rufa* (Herbst, 1783)**

*Dermestes rufus* Herbst, 1783

*Coccidula unicolor* Reitter, 1890

**Literature data.** Armenia: Jacobson (1915) (as *C. unicolor* Rt.) (Yerevan). Araks: Heyden et al. (1891) (as *C. rufa* v. *unicolor* Reitt.). Caucasus: Reitter (1890); Winkler (1927) (as *C. unicolor* Rtt.).

***Coccidula scutellata* (Herbst, 1783)**

*Chrysomela scutellata* Herbst, 1783

**Literature data.** Armenia: Szawaryn et al. (2021) (Yerevan).



### Tribe Tetrabrachini Kapur, 1948

#### ***Tetrabrachys araxis* (Reitter, 1897)**

*Lithophilus araxis* Reitter, 1897

**Literature data.** Armenia: Jacobson (1915) (Yerevan); Iablokoff-Khnzorian (1983) (Hrazdan valley, Mt. Aragats slopes, lake Sevan shores); Kovář (2007). Araks valley: Radde (1899); Heyden et al. (1906); Winkler (1927).

#### ***Tetrabrachys bipustulatus* (Barovskij, 1909)**

*Lithophilus bipustulatus* Barovskij, 1909

**Literature data.** Armenia: Iablokoff-Khnzorian (1974, 1983) (surroundings of Yerevan); Kovář (2007).

**Remarks.** According to Iablokoff-Khnzorian (1974), a distinct subspecies *Lithophilus* (= *Tetrabrachys*) *bipustulatus armeniacus* occurs in Armenia.

#### **[*Tetrabrachys caucasicus* (Weise, 1878)]**

*Lithophilus caucasicus* Weise, 1878

**Literature data.** Caucasus: Heyden et al. (1906); Winkler (1927).

#### ***Tetrabrachys connatus* (Creutzer, 1796)**

*Tritoma connata* Creutzer, 1796

**Literature data.** Armenia: Radde (1899) (Darachichag (=Tsaghkadzor)); Jacobson (1915) (Yerevan).

**Remark.** In Jacobson's (1915) list of the distribution records of *T. connatus*, Yerevan is preceded by a question mark.

#### ***Tetrabrachys major* (Crotch, 1874)**

*Lithophilus major* Crotch, 1874

**Literature data.** Armenia: Jacobson (1915) (Yerevan). Araks valley: Heyden et al. (1906).

#### **[*Tetrabrachys weisei* (Reitter, 1880)]**

*Lithophilus weisei* Reitter, 1880

**Caucasus literature data.** Heyden et al. (1906); Winkler (1927).



## Comparison of Coccinellidae faunas of Armenia, Azerbaijan, and Georgia

The checklist presented above contains 84 species that have been reported from Armenia and 14 additional species with imprecise locations (Transcaucasia, Araks valley, the Caucasus) indicating that they may or may not include Armenia. Four species reported from Armenia or adjacent areas by Jacobson (1915) and two reported by Kovář (2007) are not included, listed in Table 1 with the reasons for their exclusion.

A comparison of the reported ladybird fauna of Armenia with that of other Transcaucasian states (Azerbaijan and Georgia) is shown in Table 2. The total number of species for all the Transcaucasian countries is 116, with 84, 92, and 90 species reported from Armenia, Azerbaijan, and Georgia, respectively. Thus, the recognized ladybird fauna of Armenia is somewhat poorer than that of Azerbaijan and Georgia. However, it should be borne in mind that Armenia occupies a noticeably smaller area than the other two states: Georgia is more than twice and Azerbaijan almost three times the size of Armenia.

Approximately 12% of ladybird species reported from Transcaucasia (14 of 116 species) can be considered endemic or near-endemic to the Caucasus ecoregion (Table 3). Ten of them have been reported from Armenia (11.9% of the 84 species reported), four from Azerbaijan (4.3% of the 92 species reported), and six from Georgia (6.7% of the 90 species reported).

Another group of special interest are ladybird species non-native to the region. To our knowledge, eight such species have been reported from Transcaucasia, but the occurrence of two of them there seems unlikely, so they are not included in the list of the Transcaucasian Coccinellidae in Table 2. One of these, *Chilocorus similis* (Rossi, 1790), was reported by Schneider and Leder (1879) from Lailashi, Georgia, most probably as a result of a misidentification of *C. renipustulatus* (Scriba, 1791). The second species, *Henosepilachna vigintioctopunctata* (Fabricius, 1775), a herbivorous ladybird widely distributed in the eastern part of the Palaearctic and in the Oriental and Australian regions (Kovář 2007), was reported from Azerbaijan in an unpublished thesis cited by Snegovaya and Zare Khormizi (2022). This report likely pertains to a different species of Epilachnini. The presence in the region of the remaining six species is likely, given that each of them has been introduced in the Caucasus in the past (Table 4). All six species have been reported from Georgia, two (*Harmonia axyridis* and *Rhyzobius lophanthae*) from Azerbaijan, and only one (*H. axyridis*) from Armenia.

To conclude, the recognized ladybird fauna of Armenia, although slightly less abundant in species than those of Azerbaijan and Georgia, appears to be diverse, with a high proportion of endemic species. On the other hand, only one alien ladybird species, the harlequin ladybird (*H. axyridis*), has so far been reported from this country. The field survey revealed that this highly invasive species has become common and widespread in many parts of Armenia. The survey also shows the presence in Armenia of two ladybird species, *Anatis ocellata* and *Tytthaspis sedecimpunctata*, which had not previously been reported from the region. Further field research and examination of existing insect collections would certainly increase the number of Armenian ladybird species.



Table 1. Species reported from Armenia or adjacent regions, but not included in the present checklist.

Species	Justification for exclusion
<i>Oenopia dublieri</i> (Mulsant, 1846)	Jacobson (1915) reported a doubtful (with a question mark) record of <i>O. dublieri</i> from Yerevan, citing Schneider and Leder (1879) as a source of this information. Indeed, these authors reported <i>O. dublieri</i> , however, not from the Yerevan area, but from the North Caucasus (Karasu village in Kabardino-Balkaria (Russia)).
<i>Scymniscus armeniacus</i> (Canepari, 1979)	Kovář (2007) reported this species as occurring in Armenia, probably due to its specific epithet. However, Canepari (1979) described <i>S. armeniacus</i> (as <i>Nephus (Sidis) armeniacus</i> ) based on a single male specimen collected in Elisabetspol (today's Ganja in Azerbaijan). Canepari derived the name <i>armeniacus</i> from the ancient region of Armenia that covered much more extensive area than present-day Armenia.
<i>Scymnus (Scymnus) rufipes</i> (Fabricius, 1798)	Jacobson (1915) reported this species from Transcaucasia. Its identity is uncertain given some of its synonyms listed by Jacobson ( <i>S. corpulentus</i> Muls., <i>S. suffrianioides</i> J. Sahlb.). According to Kovář (2007), <i>S. corpulentus</i> is considered a synonym of <i>S. apetzi</i> Mulsant and <i>S. suffrianioides</i> is a valid species different from <i>S. rufipes</i> .
<i>Hyperaspis desertorum</i> Weise, 1885	Jacobson (1915) reported <i>H. desertorum</i> from Yerevan, which may refer either to this species or, more likely, to <i>H. femorata</i> Motschulsky, as indicated by one of the synonyms mentioned ( <i>H. desertorum</i> ab. <i>collaris</i> Fleisch.).
<i>Hyperaspis reppensis</i> (Herbst, 1783)	Jacobson's (1915) report of <i>H. reppensis</i> from Yerevan cannot be assigned to this or other related species due to the long list of synonyms given, which are currently recognized as several species (e.g., <i>H. stigma</i> A. Ol., <i>H. pseudopustulata</i> Muls., <i>H. hoffmannseggii</i> Grav., <i>H. histeroides</i> Fald., <i>H. illecebrosa</i> Chevr., <i>H. femorata</i> Motsch., <i>H. quadrimaculata</i> Redt.).
<i>Pharoscymnus koenigi</i> Iablokoff-Khnzorian, 1970	According to Kovář's (2007) catalogue, <i>P. koenigi</i> occurs in both the Asiatic part of Turkey and Armenia. However, the holotype and three paratypes of <i>P. koenigi</i> , all collected in Oltu (eastern Turkey) (Iablokoff-Khnzorian 1970c), are probably the only known specimens of this species.

Table 2. Coccinellidae reported from the Transcaucasian countries. The Armenian data are taken from the present checklist, while those for Azerbaijan and Georgia are primarily based on recent checklists by Snegovaya and Zare Khormizi (2022) and Migeon and Arabuli (2022), respectively. A few reports from other sources are marked and footnoted. [A] after the species name indicates a species alien to the region, [E] indicates presumed endemic or nearly endemic species. Asterisks (\*) denote new country records. The footnotes are explained at the end of the table.

Species	Armenia	Azerbaijan	Georgia
<b>Microweiseinae</b>			
<b>Serangiini</b>			
<i>Serangium montazerii</i> Fürsch, 1995 [A]			+
<b>Coccinellinae</b>			
<b>Stethorini</b>			
<i>Stethorus gilvifrons</i> (Mulsant, 1850)	+	+	+
<i>Stethorus pusillus</i> (Herbst, 1797)	+	+	+
<b>Coccinellini</b>			
<i>Adalia bipunctata</i> (Linnaeus, 1758)	+	+	+
<i>Adalia decempunctata</i> (Linnaeus, 1758)	+	+	+
<i>Anatis ocellata</i> (Linnaeus, 1758)*	+	+	+
<i>Anisosticta caucasica</i> (Fleischer, 1900) [E]	+		
<i>Anisosticta novemdecimpunctata</i> (Linnaeus, 1758)	+	+	+
<i>Aphidecta oblitterata</i> (Linnaeus, 1758)	+	+	+
<i>Bulaea lichatschovii</i> (Hummel, 1827)	+	+	+
<i>Calvia decemguttata</i> (Linnaeus, 1767)	+	+	+
<i>Calvia quatuordecimguttata</i> (Linnaeus, 1758)	+	+	+
<i>Calvia quindecimguttata</i> (Fabricius, 1777)		+	+
<i>Ceratomegilla apicalis</i> (Weise, 1879)	+	+	+
<i>Ceratomegilla notata</i> (Laicharting, 1781)	+	+	+
<i>Ceratomegilla schelkovnikovi</i> (Dobzhansky, 1927) [E]	+		+ <sup>1</sup>
<i>Ceratomegilla schneideri</i> (Weise, 1878) [E]	+	+	+
<i>Ceratomegilla undecimnotata</i> (Schneider, 1792)	+	+	+
<i>Coccinella alpigrada</i> (Iablokoff-Khnzorian, 1957) [E]	+		
<i>Coccinella hieroglyphica</i> Linnaeus, 1758		+	+
<i>Coccinella magnifica</i> Redtenbacher, 1843	+	+ <sup>2</sup>	+
<i>Coccinella quinquepunctata</i> Linnaeus, 1758	+	+	+

Species	Armenia	Azerbaijan	Georgia
<i>Coccinella saucerottii</i> Mulsant, 1850		+	
<i>Coccinella septempunctata</i> Linnaeus, 1758	+	+	+
<i>Coccinella undecimpunctata</i> Linnaeus, 1758	+	+	
<i>Coccinula quatuordecimpustulata</i> (Linnaeus, 1758)	+	+	+
<i>Coccinula sinuatomarginata</i> (Faldermann, 1837)	+	+	+
<i>Halyzia sedecimguttata</i> (Linnaeus, 1758)	+	+	+
<i>Harmonia axyridis</i> (Pallas, 1773) [A]	+	+	+
<i>Harmonia conformis</i> (Boisduval, 1835) [A]			+
<i>Harmonia quadripunctata</i> (Pontoppidan, 1763)		+	+
<i>Hippodamia septemmaculata</i> (DeGeer, 1775)		+	
<i>Hippodamia tredecimpunctata</i> (Linnaeus, 1758)	+	+	+
<i>Hippodamia variegata</i> (Goeze, 1777)	+	+	+
<i>Myrrha octodecimguttata</i> (Linnaeus, 1758)	+	+	+
<i>Myzia oblongoguttata</i> (Linnaeus, 1758)	+	+	+
<i>Oenopia bissexnotata</i> (Mulsant, 1850)		+	
<i>Oenopia conglobata</i> (Linnaeus, 1758)	+	+	+
<i>Oenopia impustulata</i> (Linnaeus, 1758)	+	+	+
<i>Oenopia lyncea agnatha</i> (Rosenhauer, 1808)	+	+	+
<i>Oenopia oncina</i> (Olivier, 1808)	+	+	+
<i>Propylea quatuordecimpunctata</i> (Linnaeus, 1758)	+	+	+
<i>Psyllobora vigintiduopunctata</i> (Linnaeus, 1758)	+	+	+
<i>Sospita vigintiguttata</i> (Linnaeus, 1758)			+
<i>Tytthaspis sedecimpunctata</i> (Linnaeus, 1761)*	+	+	+
<i>Vibidia duodecimguttata</i> (Poda von Neuhaus, 1761)	+	+	+
<b>Epilachnini</b>			
<i>Chnootriba elaterii</i> (Rossi, 1794)		+	+
<i>Cynegetis impunctata</i> (Linnaeus, 1767)		+	
<i>Henosepilachna argus</i> (Geoffroy, 1785)	+	+	+
<i>Subcoccinella vigintiquatuorpunctata</i> (Linnaeus, 1758)	+	+	+
<b>Noviini</b>			
<i>Novius cardinalis</i> (Mulsant, 1850) [A]			+
<b>Scymnini</b>			
<i>Clitostethus arcuatus</i> (Rossi, 1794)	+	+	+
<i>Nephus (Bipunctatus) bipunctatus</i> (Kugelann, 1794)		+	+
<i>Nephus (Geminosipho) reunioni</i> (Fürsch, 1974) [A]		+	+ <sup>3</sup>
<i>Nephus (Nephus) ludyi</i> (Weise, 1879)	+		
<i>Nephus (Nephus) quadrimaculatus</i> (Herbst, 1783)	+	+	+
<i>Nephus (Nephus) redtenbacheri</i> (Mulsant, 1846)		+	+
<i>Nephus (Sidis) caucasicus</i> (Weise, 1929) [E]	+		
<i>Scymniscus armeniacus</i> (Canepari, 1979) [E]		+ <sup>4</sup>	
<i>Scymniscus biflammulatus</i> (Motschulsky, 1837)	+	+	+
<i>Scymniscus biguttatus</i> (Mulsant, 1850)	+	+	+
<i>Scymnus (Mimopullus) pharaonis</i> Motschulsky, 1851	+		
<i>Scymnus (Neopullus) haemorrhoidalis</i> Herbst, 1797	+	+	+
<i>Scymnus (Neopullus) limbatus</i> Stephens, 1832	+	+	+
<i>Scymnus (Neopullus) testaceus</i> Motschulsky, 1837	+	+	+ <sup>5</sup>
<i>Scymnus (Pullus) argutus</i> Mulsant, 1850	+	+	+
<i>Scymnus (Pullus) auritus</i> Thunberg, 1795		+	+
<i>Scymnus (Pullus) ferrugatus</i> (Moll, 1785)			+
<i>Scymnus (Pullus) fraxini</i> Mulsant, 1850	+	+	+
<i>Scymnus (Pullus) subvillosus</i> (Goeze, 1777)	+	+	+
<i>Scymnus (Pullus) suturalis</i> Thunberg, 1795	+	+	+ <sup>5</sup>
<i>Scymnus (Scymnus) apetzi</i> Mulsant, 1846	+	+	+
<i>Scymnus (Scymnus) femoralis</i> (Gyllenhal, 1827)		+	
<i>Scymnus (Scymnus) flavicollis</i> Redtenbacher, 1843	+		
<i>Scymnus (Scymnus) frontalis</i> (Fabricius, 1787)	+	+	+
<i>Scymnus (Scymnus) inderihensis</i> Mulsant, 1850	+		



Species	Armenia	Azerbaijan	Georgia
<i>Scymnus (Scymnus) interruptus</i> (Goeze, 1777)	+	+	+
<i>Scymnus (Scymnus) magnomaculatus</i> Fürsch, 1958	+	+	+
<i>Scymnus (Scymnus) marginalis</i> (Rossi, 1794)			+
<i>Scymnus (Scymnus) nigrinus</i> Kugelann, 1794		+	+
<i>Scymnus (Scymnus) pallipes</i> Mulsant, 1850	+		
<i>Scymnus (Scymnus) rubromaculatus</i> (Goeze, 1777)	+	+	+
<i>Scymnus (Scymnus) rufipes</i> (Fabricius, 1798)		+	
<b>Platynaspini</b>			
<i>Platynaspis luteorubra</i> (Goeze, 1777)	+	+	+
<b>Hyperaspidini</b>			
<i>Hyperaspis campestris</i> (Herbst, 1783)			+
<i>Hyperaspis caucasica</i> Crotch, 1874 [E]		+ <sup>6</sup>	
<i>Hyperaspis erythrocephala</i> (Fabricius, 1787)		+	+
<i>Hyperaspis femorata</i> (Motschulsky, 1837)	+	+	+
<i>Hyperaspis histeroides</i> (Faldermann, 1837)	+	+	
<i>Hyperaspis reppensis</i> (Herbst, 1783)		+	+
<i>Hyperaspis transversoguttata</i> Weise, 1878	+	+	+
<b>Diomini</b>			
<i>Diomus rubidus</i> (Motschulsky, 1837)	+	+	+
<b>Chilocorini</b>			
<i>Chilocorus bipustulatus</i> (Linnaeus, 1758)	+	+	+
<i>Chilocorus renipustulatus</i> (Scriba, 1791)		+	+
<i>Exochomus octosignatus</i> (Gebler, 1830)	+	+	+
<i>Exochomus quadriguttatus</i> Fleischer, 1900 [E]	+		+ <sup>7</sup>
<i>Exochomus quadripustulatus</i> (Linnaeus, 1758)	+	+	+
<i>Exochomus undulatus</i> Weise, 1878	+	+	+
<i>Parexochomus melanocephalus</i> (Zubkov, 1833)	+	+	+ <sup>8</sup>
<i>Parexochomus nigripennis</i> (Erichson, 1843)	+		
<i>Parexochomus nigromaculatus</i> (Goeze, 1777)	+	+	+
<i>Parexochomus pubescens</i> (Küster, 1848)	+	+	
<b>Sticholotidini</b>			
<i>Coelopterus armeniacus</i> Weise, 1894 [E]	+		
<i>Pharoscymnus armenus</i> Iablokoff-Khnzorian, 1970 [E]	+		+
<i>Pharoscymnus smirnovi</i> Dobzhansky, 1927		+	+
<b>Coccidulini</b>			
<i>Coccidula lithophiloides</i> Reitter, 1890 [E]	+	+	
<i>Coccidula rufa</i> (Herbst, 1783)	+	+	+
<i>Coccidula scutellata</i> (Herbst, 1783)	+	+	+
<i>Rhyzobius lophanthae</i> (Blaisdell, 1892) [A]		+	+
<b>Tetrabrachini</b>			
<i>Tetrabrachys araxis</i> (Reitter, 1897) [E]	+	+	
<i>Tetrabrachys bipustulatus</i> (Barovskij, 1909)	+		
<i>Tetrabrachys caucasicus</i> (Weise, 1878) [E]			+
<i>Tetrabrachys coloratus</i> Fürsch, 1960		+	
<i>Tetrabrachys connatus</i> (Creutzer, 1796)	+	+	+
<i>Tetrabrachys major</i> (Crotch, 1874)	+		
<i>Tetrabrachys weisei</i> (Reitter, 1880) [E]			+
No. species: 116	84	92	90

<sup>1</sup> Reported by Dobzhansky (1927) from Borjomi and Bakuriani in Georgia and Mamison Pass on the Georgian-Russian border and by Kovář (2007) generally from Georgia.

<sup>2</sup> Reported by Schneider and Leder (1879) from Baku district, Azerbaijan.

<sup>3</sup> Reported from Georgia by Kovář (2007).

<sup>4</sup> Reported by Canepari (1979) from Elisabetspol (now Ganja), Azerbaijan.

<sup>5</sup> From Georgia reported by Schneider and Leder (1879) and Merkviladze and Kvavadze (2002).

<sup>6</sup> Reported from Nukha (now Shaki), Azerbaijan by Motschulsky (Victor 1837) (as *Coccinella 6 pustulata* Victor). Kovář's (2007) report from Georgia was not included, as it probably follows Motschulsky's (Victor 1837) description of the site as 'Noucha en Géorgie'.

<sup>7</sup> Reported by Kovář (1995) from Gagra in Abkhazia (formally part of Georgia) and by Iablokoff-Khnzorian (1983) and Merkviladze and Kvavadze (2002) (as *E. quadripustulatus* ssp. *quadriguttatus* Fleisch, 1900) from several regions of Georgia.

<sup>8</sup> Reported by Merkviladze and Kvavadze (2002) from several regions in Georgia.

**Table 3.** Coccinellidae species with a known range restricted to or only slightly exceeding the Caucasus ecoregion.

Species	Remarks on distribution and nomenclature
<i>Anisosticta caucasica</i> (Fleischer, 1900)	For a long time, this ladybird was known only from a single type specimen that, according to lablokoff-Khnzorian (1982), was collected by Fleischer in the Armenian part of the Araks valley. Further specimens were reported by Fürsch (1977) from Dizin in northern Iran.
<i>Ceratomegilla schelkovnikovi</i> (Dobzhansky, 1927)	It seems that the specimens collected by Dobzhansky (1927) in several locations in Armenia, Georgia, and the Russian part of the Caucasus (upper course of the Belaya River) are the only known specimens of this species.
<i>Ceratomegilla schneideri</i> (Weise, 1878)	This species is probably a Caucasian endemic. Apart from Armenia, Schneider and Leder (1879) reported it from Georgia and Azerbaijan and lablokoff-Khnzorian (1983) added the Russian territories of Kabardino-Balkaria, Kuban region and Ossetia in the North Caucasus. Bieńkowski (2018: fig. 11C) presented a photograph of a specimen from the Republic of Adygea (NW of the North Caucasus, Russia).
<i>Coccinella alpigrada</i> (lablokoff-Khnzorian, 1957)	Khnzorian (1957) reported several Armenian sites for <i>C. alpigrada</i> . For a long time, these were the only known sites of this species until Kovář (2005) reported it from the Erzurum Province of Turkey (Armenian Upland).
<i>Nephus caucasicus</i> (Weise, 1929)	This species was described (as <i>Scymnus plagiatus</i> Weise in Schneider & Leder, 1879) based on specimens collected near Karasu village (Kabardino-Balkaria, the North Caucasus, Russia) and Yerevan (Armenia). More recently, it was also reported from Tehran Province in northern Iran (Jafari et al. 2013).
<i>Scymniscus armeniacus</i> (Canepari, 1979)	It seems that the type specimen from Ganja in Azerbaijan (Canepari 1979) is the only known specimen of this species.
<i>Hyperaspis caucasica</i> Crotch, 1874	Motschulsky (Victor 1837) found this species in the environs of present-day Shaka in Azerbaijan and described it as <i>Coccinella 6 pustulata</i> . Subsequently, due to homonymy, Crotch (1874) replaced this name with <i>H. caucasica</i> . Kovář (2007) considered <i>Hyperaspis assimilis</i> Zaslavskij, 1966 from Tajikistan as a synonym of <i>H. caucasica</i> , while lablokoff-Khnzorian (1983) treated both <i>H. caucasica</i> and <i>H. assimilis</i> as synonyms of <i>H. guttulata</i> Fairmaire, 1870, a species reported from the western Mediterranean region, Tajikistan, and Mongolia (Kovář 2007). A comparative examination of <i>H. caucasica</i> , <i>H. assimilis</i> , and <i>H. guttulata</i> would need to be carried out to establish their identities.
<i>Exochomus quadriguttatus</i> Fleischer, 1900	<i>Exochomus quadriguttatus</i> appears to be endemic to the Caucasus ecoregion or its range extends slightly beyond this area. It was reported from the western North Caucasus, western Georgia, Armenia, and north-eastern Anatolia (lablokoff-Khnzorian 1983; Kovář 1995; Merkviladze and Kvavadze 2002).
<i>Coelopterus armeniacus</i> Weise, 1894	<i>Coelopterus armeniacus</i> was described based on two specimens collected in the Araks valley. Later authors consistently reported it from Armenia but, surprisingly, Kovář (2007) also mentioned Israel.
<i>Pharoscymnus armenus</i> lablokoff-Khnzorian, 1970	It is known from Armenia and eastern Georgia (lablokoff-Khnzorian 1970b, 1983).
<i>Coccidula lithophiloides</i> Reitter, 1890	<i>Coccidula lithophiloides</i> was described from Ordubad (Azerbaijan exclave of Nakhchivan). According to lablokoff-Khnzorian (1983), it is common in Armenia along the Araks valley. It was also reported from several provinces of Iran (Kermanshah, Lorestan, Isfahan, and Fars; Biranvand et al. 2024), where it was described by Duverger (1983) as <i>Lithophilus naviauxi</i> .
<i>Tetrabrachys araxis</i> (Reitter, 1897)	lablokoff-Khnzorian (1983) stated that <i>T. araxis</i> was described from Armenia, but Reitter’s (1897) description was based on specimens collected in the Araks valley near Ordubad, i.e., in the Azerbaijan exclave of Nakhchivan. Nonetheless, the former author mentioned several other locations of this species within the current borders of Armenia. <i>Tetrabrachys anatolicus</i> (Pic, 1901), considered a synonym of <i>T. araxis</i> both by lablokoff-Khnzorian (1983) and Kovář (2007), was described from Konya in southern Turkey, more than 1,000 km W-WS of the Transcaucasian locations. The identity of <i>T. anatolicus</i> needs to be examined.
<i>Tetrabrachys caucasicus</i> (Weise, 1878)	Description of this species was based on a single specimen collected in Borjomi in Georgia (Schneider and Leder 1879). Merkviladze and Kvavadze (2002) reported it also from the region of Tbilisi, and Kovář (2007) mentioned it generally from the Asiatic part of Turkey.
<i>Tetrabrachys weisei</i> (Reitter, 1880)	Reitter (1880) mentioned in general that the specimen he used to describe <i>T. weisei</i> was collected by Leder in the Caucasus. Merkviladze and Kvavadze (2002) reported it from the Tbilisi district of Georgia, and lablokoff-Khnzorian (1974, 1983) also from Crimea.



Table 4. Non-native Coccinellidae reported from Transcaucasia.

Species	Information on introductions in the region
<i>Serangium montazerii</i> Fürsch, 1995	Widely released in the Black Sea coast of the Caucasus after 1973 (as <i>S. parcesetosum</i> (Sicard, 1929)) (Booth and Polaszek 1996; Bieńkowski and Orlova-Bienkowskaja 2020). Its presence in western Georgia was confirmed by Migeon and Arabuli (2022).
<i>Harmonia axyridis</i> (Pallas, 1773)	Released after 1927 in Georgia and then at the Black Sea coast of Russia (Bieńkowski and Orlova-Bienkowskaja 2020). Its presence in eastern Georgia was confirmed by Merkviladze and Kvavadze (2002). The European invasive population has been spreading in the Caucasus since ~ 2012 (Belyakova and Reznik 2013; Ukrainsky 2013).
<i>Harmonia conformis</i> (Boisduval, 1835)	Released in Georgia after 1958 (Bieńkowski and Orlova-Bienkowskaja 2020). Its presence in western Georgia was confirmed by Merkviladze and Kvavadze (2002).
<i>Novius cardinalis</i> (Mulsant, 1850)	Released in the Caucasus after 1931 (Bieńkowski and Orlova-Bienkowskaja 2020). Its presence in western Georgia was confirmed by Merkviladze and Kvavadze (2002).
<i>Nephus reunioni</i> (Fürsch, 1974)	Released in Georgia before 1987 (Bieńkowski and Orlova-Bienkowskaja 2020).
<i>Rhyzobius lophanthae</i> (Blaisdell, 1892)	Released in the Caucasus after 1947 (Bieńkowski and Orlova-Bienkowskaja 2020). Its presence in western Georgia was confirmed by Merkviladze and Kvavadze (2002).

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Additional information

Conflict of interest

The authors have declared that no competing interests exist.

Ethical statement

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Author contributions

Conceptualization: PC, SG. Data curation: SG, PC. Investigation: KT, PC, AG, MA, SG, JR. Supervision: PC. Writing - original draft: SG, PC. Writing - review and editing: PC, KT, AG, JR, MA, SG.

Author ORCIDs

- Shoghik Ghazaryan  <https://orcid.org/0009-0007-9071-6545>
- Marine Arakelyan  <https://orcid.org/0000-0002-6334-5714>
- Astghik Ghazaryan  <https://orcid.org/0009-0005-2840-0019>
- Jerzy Romanowski  <https://orcid.org/0000-0003-1050-6403>
- Krzysztof Turlejski  <https://orcid.org/0000-0001-6708-7815>
- Piotr Ceryngier  <https://orcid.org/0000-0003-1085-9751>

Data availability

All of the data that support the findings of this study are available in the main text.



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